

Worksheets

Each of the following subsections contains a worksheet with which the system engineer can assess the total system impact of a given configuration on the specified capacity. These worksheets implement the algorithms described in “System capacities” on page 29. The result of the worksheet is a number or set of numbers, in the units of the capacity being assessed, as defined in “System capacities” on page 29. A simplified table of capacity limits is given to provide easy determination of feasibility and the size of system required.

Network loop traffic capacity worksheet

Column A		Column B (Loops)
TDS/CON Loops	One card (2 loops) per Network Module*	_____
BLOCKING:		
ENET Loop	Admin. Sets	_____ × 6 = _____ CCS
	Non-ACD trunks	+ _____ × 26 = _____ CCS
	Subtotal	= _____ ÷ 660 = _____ (N _{0e})
XNET Loop	Admin. Sets	_____ × 6 = _____ CCS
	Non-ACD trunks	+ _____ × 26 = _____ CCS
	Subtotal	= _____ ÷ 875 = _____ (N _{0x})
NON_BLOCKING:		
(ENET or XNET)	Agent Sets	_____
	Supervisor Sets	+ _____
	ACD Analog and RAN Trunks	+ _____
	Subtotal	= _____ ÷ 30 = _____ (N ₁)
DTI Trunks	= _____ ÷ 24	= _____ (N _{2d})
PRI Trunks	_____	
	+ 2	
	= _____ ÷ 24	= _____ (N _{2p})
Music Ports	= _____ ÷ 30	= _____ (N ₃₁)
MM/MIVR/HEVP Ports	_____ ÷ 24	= _____ (N ₃₂)
Total loops (Sum of entries under column B)		= _____ (N _L)
Note: All calculations should be rounded up to the next integer. * Iterative procedure may be needed if the number of network modules required was not correctly estimated at the outset. Conclusion: N _L ≤ 16 option 21 16 < N _L ≤ 32 option 61 32 < N _L ≤ 160 option 71/81		

Option 11 Card Slot Calculation

Perform this calculation to determine the physical slot requirement of a given configuration.

Table 91
Worksheet for option 11 Card Slot Calculation

Column A	Column B
Agent Sets _____	
Supervisor sets + _____	
Admin. sets + _____	
Subtotal = _____ ÷ 16 (round up)	= _____
Analog trunks = _____ ÷ 8 (round up)	= _____
PRI trunks _____	
+ 2	
= _____ ÷ 24 (round up)	= _____
DTI trunks _____ ÷ 24 (round up)	= _____
Meridian Mail (enter 1 for yes, 0 for no)	= _____
RAN/MUS (enter 1 for yes, 0 for no)	= _____
CCR/HER/AML (enter 1 for yes, 0 for no)	= _____
CDR,MAX,SDI ports (enter 1 for 3 ports, else 0)	= _____
Total card slots (Sum of entries under column B)	= _____ (S)
Conclusions: — $S \leq 9$ One cabinet — $9 < S \leq 29$ Two to three Cabinets — $29 < S$ Too large for option 11	

Physical Slot Calculation Example

Calculate the number of calls for each feature according to earlier procedures before using the worksheet.

Table 92
Worksheet for option 11 Card Slot Calculation (Example)

Column A		Column B
Agent Sets	64	
Supervisor Sets +	5	
Admin. Sets +	50	
Subtotal =	119 ÷ 16 (round up)	= 8
Analog Trunks =	15 ÷ 8 (round up)	= 2
PRI Trunks	60	
	+ 2	
	= 62 ÷ 24 (round up)	= 3
DTI Trunks	_____ ÷ 24 (round up)	= _____
Meridian Mail (enter 1 for yes, 0 for no)		= 1
RAN/MUS (enter 1 for yes, 0 for no)		= _____
CCR/HER/AML (enter 1 for yes, 0 for no)		= 1
CDR,MAX,SDI ports (enter 1 for 3 ports, else 0)		= _____
Total Card Slots (Sum of entries under column B)		= 15 (S)
Conclusion:		
— $9 < S \leq 29$ two to three Cabinets		

Physical capacity worksheets

The procedure for card slot calculation for options 21 and 61 is different. Users should make a first guess as to which system is the right candidate for the application. Otherwise, both worksheets must be filled out.

Table 93
Worksheet for option 21* card slot calculation

Column A (Loop/card)		Column B (Slots)
TDS/CON	One/Network Module	= _____
Music Loop	One TDS/CON provides one Music	= _____(N ₃₁)
QPC414 ENET	Blocking Loops _____(N _{0e})	
	DTI Loops + _____(N _{2d})	
	PRI Loops + _____(N _{2p})	
	MMail Loops + _____(N ₃₂)	
	Subtotal = _____ ÷ 2	= _____
Clock Controller	= 1 (If N ₂ > 0; else = 0)	= _____
NT8D04 XNET	Blocking Loops _____(N _{0x})	
	Non-blocking Loops + _____(N ₁)	
	Subtract 4 for NT8D18 NET - _____4_____	
	Subtotal = _____ ÷ 4	= _____(S _x)
NT8D18 NET/DTR	= 1 (always equipped)	= _____1_____
I/O cards**		= _____
QPC720 DTI/PRI	= 2 × N ₂ , if no NT8D35 module; else = 0	= _____
Total # of card slots (Sum of entries under column B)		= _____(S _c)
Conclusion: S _c ≤ 7 option 21 7 < S _c ≤ 16 option 61 16 < S _c option 71/81		
Note: All calculations should be rounded up to the next integer. A negative loop number should be set to zero.		
*Iterative procedure may be needed, if using option 21 or 61 was not clear at the outset.		
**Refer to Table 5, "I/O interface for applications," on page 48 to find the number of I/O cards needed for applications.		

Table 94
Worksheet for option 61 card slot calculation

Column A (Loop/card)		Column B (Slots)
TDS/CON	One/Network Module*	= _____
MUSic Loop	One TDS/CON provides one MUSic	= _____(N ₃₁)
QPC414 ENET	Blocking Loops _____(N _{0e})	
	DTI Loops + _____(N _{2d})	
	PRI Loops + _____(N _{2p})	
	MMail Loops + _____(N ₃₂)	
	Subtotal = _____ ÷ 2	= _____
NT8D04 XNET	Blocking Loops _____(N _{0x})	
	Non-blocking Loops + _____(N ₁)	
	Subtotal = _____ ÷ 4	= _____(S _x)
I/O cards**	Must be ≥ S _x	= _____
QPC720 DTI/PRI	= 2 × N ₂ , if no NT8D35 module; else = 0	= _____
Total # of card slots (sum of entries under column B)		= _____(S _c)
Conclusion: S _c ≤ 7 option 21 7 < S _c ≤ 16 option 61 16 < S _c option 71/81		
Note: All calculations should be rounded up to the next integer. A negative loop number should be set to zero.		
*Iterative procedure may be needed, if the number of modules to use was not clear at the outset.		
**Refer to Table 3, "Intelligent peripheral equipment," on page 20 to find the number of I/O cards needed for applications.		

Table 95
System power consumption worksheet

Module	Quantity	Power Consumption (watts)	
NT6D39	×	360	=
NT6D44	×	400	=
NT8D11	×	500	=
NT8D13	×	240	=
NT8D34	×	300	=
NT8D35	×	270	=
NT8D37	×	460	=
NT8D47	×	175	=
Pedestals	×	50	=
		Total power	=

Processor load worksheet

Software Release _____

Table 96

Processor load worksheet (Part 1 of 5)

Feature	Usage	×	Real Time Factor	=	EBC
Busy hour calls	_____	×	1.20	=	_____
500, 2500 set calls	_____	×	.00	=	_____
SL-1 set calls	_____	×	.12	=	_____
Digital set calls	_____	×	.12	=	_____
BRI voice calls	_____	×	.12	=	_____
CLASS set calls	_____	x	.24	=	_____
Data calls	_____	×	.14	=	_____
CPND characters	_____	×	.01	=	_____
CDP calls	_____	×	.06	=	_____
MM (CSL) calls	_____	×	1.05	=	_____
MM (EES) calls	_____	×	4.12	=	_____
NMS (Main) calls	_____	×	1.19	=	_____
NMS (Remote) calls	_____	×	2.75	=	_____
MM-CCR-Announcement	_____	x	.57	=	_____
Auto Attendant calls	_____	×	1.36	=	_____
Voice Menus	_____	x	.51	=	_____
Voice Forms (leave 1)	_____	x	.61	=	_____
Voice Forms (login)	_____	x	1.37	=	_____
Voice Forms (retrieve 1)	_____	x	1.67	=	_____
ACD (Inbound) calls - NT6D66	_____	×	.17	=	_____
ACD (Inbound) calls - NT9D19	_____	x	.12	=	_____

Table 96
Processor load worksheet (Part 2 of 5)

Feature	Usage	×	Real Time Factor	=	EBC
ACD (Inbound) calls - NT5D10		x	.08	=	
ACD (Inbound) calls - 11C		x	.13	=	
ACD (outbound) calls		×	.50	=	
ACD-D/MAX calls		×	.81	=	
ACD - Multiple Q Assignment		x	.37	=	
NACD Overflowed calls		×	2.89	=	
Meridian Link calls		×	.38	=	
MLink status messages		×	.57	=	
MLink call transfers		×	1.72	=	
HER calls		×	.91	=	
CCR - scriptless overhead		x	.91	=	
ICCM - scriptless overhead		x	.92	=	
CCR or ICCM calls (simple script)		×	0.38	=	
CCR or ICCM calls (medium script)		x	1.77	=	
CCR or ICCM calls (complex script)		x	2.14	=	
Broadcast RAN		x	.50	=	
Autodialer		x	.97	=	
Predictive Dialer		×	1.72	=	
MIVR without transfer		×	0.51	=	
MIVR with transfer		×	1.78	=	
PMSI Room Status Update		x	1.71	=	
Conference or transfer		x	1.78	=	

Table 96
Processor load worksheet (Part 3 of 5)

Feature	Usage	×	Real Time Factor	=	EBC
Internal CDR calls - QSDI TTY - NT6D66 CP card (51C/61C/81/81C)		×	1.25	=	
Outgoing CDR calls - QSDI TTY- NT6D66 CP card (51C/61C/81/81C)		×	1.03	=	
Incoming CDR calls - QSDI TTY- NT6D66 CP card (51C/61C/81/81C)		×	1.00	=	
Tandem CDR calls - QSDI TTY- NT6D66 CP card (51C/61C/81/81C)		x	1.14	=	
Internal CDR calls - QSDI TTY - NT9D19 CP card (51C/61C/81C)		x	.76	=	
Outgoing CDR calls - QSDI TTY- NT9D19 CP card (51C/61C/81C)		x	.38	=	
Incoming CDR calls - QSDI TTY- NT9D19 CP card (51C/61C/81C)		x	.63	=	
Tandem CDR calls - QSDI TTY- NT9D19 CP card (51C/61C/81C)		x	.69	=	
Internal CDR calls - QSDI TTY - NT5D10 CP card (51C/61C/81C)		x	.50	=	
Outgoing CDR calls - QSDI TTY- NT5D10 CP card (51C/61C/81C)		x	.38	=	
Incoming CDR calls - QSDI TTY- NT5D10 CP card (51C/61C/81C)		x	.34	=	

Table 96
Processor load worksheet (Part 4 of 5)

Feature	Usage	×	Real Time Factor	=	EBC
Tandem CDR calls - QSDI TTY-NT5D10 CP card (51C/61C/81C)		x	.43	=	
Internal CDR calls - QSDI TTY - 11C		x	.39	=	
Outgoing CDR calls - QSDI TTY - 11C		x	.32	=	
Incoming CDR calls - QSDI TTY - 11C		x	.32	=	
Tandem CDR calls - QSDI TTY - 11C		x	.29	=	
Internal CDR calls - MSDL TTY		x	2.74	=	
Outgoing CDR calls - MSDL TTY		x	2.34	=	
Incoming CDR calls - MSDL TTY		x	2.42	=	
Tandem CDR calls - MSDL TTY		x	2.11	=	
Authorization Code calls		×	.86	=	
Off-Hook Queuing calls		×	1.53	=	
Tandem (analog)		x	.28		
Tandem (ISDN)		x	.27		
Trunk Calls, incoming DTN		×	.12	=	
Trunk Calls, incoming DIP		×	.12	=	
Trunk Calls, outgoing TIE		×	.12	=	
Trunk Calls, outgoing CO		×	.09	=	
RAN messages		×	.37	=	
Music		×	.37	=	
BARS/NARS calls		×	.14	=	

Table 96
Processor load worksheet (Part 5 of 5)

Feature	Usage	×	Real Time Factor	=	EBC
NFCR calls		×	1.32	=	
VNS - in		x	.57	=	
VNS - out		x	.63	=	
DASS - in		x	.33	=	
DASS - out		x	.22	=	
DPNSS - in		x	.31	=	
DPNSS - out		x	.40	=	
QSIG - in		x	.55	=	
QSIG - out		x	.60	=	
DTI calls, incoming		×	.25	=	
DTI calls, outgoing		×	.53	=	
PRA calls, incoming		×	.11	=	
PRA calls, outgoing		×	.31	=	
RVQ calls		×	1.41	=	
Superloop calls		×	-0.19	=	
Total Real Time Impact (add up the EBC column)			EBC		

Table 97
Real time factors by release (Part 1 of 4)

Feature	x11 Release				
	19	20	21	22	23
SL-1 telephone calls	0.14				
Digital telephone calls	0.23	0.21	0.14	0.14	0.12
BRI voice calls	0.45	0.19	0.12	0.12	0.12
CLASS set calls					0.24
Data calls	0.23	0.21	0.14	0.14	0.14
CPND characters	0.04	0.01	0.01	0.03	0.01
CDP calls	0.13	0.05	0.05	0.06	0.06
MM (CSL) calls	2.64	1.05	1.05	1.05	1.05
MM (EES, dtmf on) calls	5.25	4.12	4.12	4.12	4.12
MM (EES, dtmf off) calls		1.74	1.74	1.74	1.74
NMS (Main) calls	3.46	1.19	1.19	1.19	1.19
NMS (Remote) calls	3.46	2.75	2.75	2.75	2.75
Auto Attendant calls	3.86	1.36	1.36	1.36	1.36
ACD (Inbound) calls - NT6D66 CP card	0.61	0.21	0.14	0.32	0.17
ACD (Inbound) calls - NT9D19 CP card			0.14	0.32	0.12
ACD (Inbound) calls - NT5D10 CP card					0.08
ACD (Inbound) calls - 11C				0.32	0.13
ACD-D/MAX calls	0.33	0.81	0.81	0.81	0.81
NACD Overflowed calls	2.98	2.89	2.89	2.89	2.89
Meridian Link calls	0.08	0.38	0.38	0.38	

Table 97
Real time factors by release (Part 2 of 4)

Feature	x11 Release				
	19	20	21	22	23
MLink status messages	0.59	0.57	0.57	0.57	0.57
MLink Call Transfers	1.77	1.72	1.72	1.72	1.72
HER calls	1.27	1.31	1.31	0.91	0.91
CCR scriptless overhead					0.91
ICCM scriptless overhead					0.92
CCR or ICCM - simple script					0.38
CCR or ICCM - medium script					1.77
CCR or ICCM - complex script					2.14
CCR calls (simple script) - pre ICCM			1.31	0.91	
CCR calls (medium script) - pre ICCM			2.63	1.82	
CCR calls (complex script) - pre ICCM			3.94	2.73	
MIVR (no transfer)				0.57	0.57
MIVR (with transfer)				1.78	1.78
Autodialer			0.97	0.97	0.97
Internal CDR calls - QSDI TTY - NT6D66	2.17	0.88	1.49	1.47	1.25
Outgoing CDR calls - QSDI TTY - NT6D66	1.98	0.65	1.09	1.11	1.03
Incoming CDR calls - QSDI TTY - NT6D66	1.30	0.89	1.25	1.28	1.00
Tandem CDR calls - QSDI TTY - NT6D66				1.09	1.14
Internal CDR calls - QSDI TTY - NT9D19					0.76
Outgoing CDR calls - QSDI TTY - NT9D19					0.38

Table 97
Real time factors by release (Part 3 of 4)

Feature	x11 Release				
	19	20	21	22	23
Incoming CDR calls - QSDI TTY - NT9D19					0.63
Tandem CDR calls - QSDI TTY - NT9D19					0.69
Internal CDR calls - QSDI TTY - NT5D10					0.50
Outgoing CDR calls - QSDI TTY - NT5D10					0.38
Incoming CDR calls - QSDI TTY - NT5D10					0.34
Tandem CDR calls - QSDI TTY - NT5D10					0.43
Internal CDR calls - QSDI TTY - 11E, 11C			0.31	0.39	0.39
Outgoing CDR calls - QSDI TTY - 11E, 11C			0.23	0.32	0.32
Incoming CDR calls - QSDI TTY - 11E, 11C			0.23	0.32	0.32
Tandem CDR calls - QSDI TTY - 11E, 11C			0.23	0.29	0.29
Internal CDR calls - MSDL TTY				2.74	2.74
Outgoing CDR calls - MSDL TTY				2.34	2.34
Incoming CDR calls - MSDL TTY				2.42	2.42
Tandem CDR calls - MSDL TTY				2.11	2.11
Tandem (analog) calls			0.23	0.23	0.28
Tandem (isdn) calls			0.21	0.21	0.27
Authorization Code calls	0.74	0.85	0.85	0.83	0.86
Off-Hook Queuing calls	0.78	0.59	0.47	1.54	1.54
Trunk Calls, incoming DTN	0.16	0.22	0.11	0.11	0.12
Trunk Calls, incoming DIP	0.37	0.22	0.11	0.11	0.12

Table 97
Real time factors by release (Part 4 of 4)

Feature	x11 Release				
	19	20	21	22	23
Trunk Calls, outgoing TIE	0.40	0.15	0.15	0.11	0.12
Trunk Calls, outgoing CO	0.22	0.04	0.03	0.07	0.09
RAN messages	0.63		0.37	0.37	0.37
Music				0.37	0.37
BARS/NARS calls	0.13	0.18	0.06	0.14	0.14
NFCR calls	0.11	0.09	0.08	0.08	1.32
VNS - in			0.57	0.57	0.57
VNS - out			0.63	0.63	0.63
DASS - in			0.33	0.33	0.33
DASS - out			0.22	0.22	0.22
DPNSS - in			0.31	0.31	0.31
DPNSS - out			0.40	0.40	0.40
QSIG - in			0.55	0.55	0.55
QSIG - out			0.60	0.60	0.60
DTI calls (incoming)	0.22	0.20	0.30	0.26	0.25
DTI calls (outgoing)		0.49	0.55	0.44	0.53
PRA calls (incoming)	-0.11	0.20	0.16	0.16	0.11
PRA calls (outgoing)		0.24	0.22	0.22	0.31
RVQ calls	1.45	1.41	1.41	1.41	1.41
Superloop calls	-0.35	-0.20	-0.20	-0.20	-0.19

Copy the factors needed from the column in this table corresponding to the correct release into the “Real Time Factor” column of [Table 96](#). Compare the resulting sum from [Table 93](#) (A) to the capacity of the proposed system as determined from [Table 98](#) (B). If A is greater than B, the system does not have sufficient capacity to handle the proposed feature load.

Table 98
Meridian 1 real time capacity by release (EBC)

X11 release	16	17	18	19	20	21	22	23
Option 11E	N/A	N/A	N/A	N/A	5,800	5,800	N/A	N/A
ST, STA, options 21, 21A	5,600	6,600	6,400	6,200	N/A	N/A	N/A	N/A
STE, option 21E	N/A	24,000	23,000	22,000	20,600	18,700	N/A	N/A
NT, XT, options 51, 61, 71	28,000	33,000	32,000	31,000	24,800	22,500	N/A	N/A
Option 51C/61C81/81C w/NT6D66 CP card	N/A	N/A	70,000	68,000	54,300	49,400	43,200	40,375
Option 81/81C w/NT9D19 CP card	N/A	N/A	N/A	N/A	N/A	81,500	67,150	61,600
Option 81/81C w/NT5D10 CP card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	81,925
Option 11C	N/A	N/A	N/A	N/A	N/A	N/A	50,300	48,350

Memory size worksheet

Software Release: _____

Table 99
PDS calculation worksheet (Part 1 of 5)

Feature	Usage	X	PDS factor*	=	Memory (SL-1 words)**
Fixed Address Globals	1	X		=	
500/2500 telephones*		X		=	
SL-1 telephones*		X		=	
M2006/2008 telephones*					
M2009 telephones*					
M2016/2216/2616 telephones*					
M2112 telephones*					
M2317 telephones*					
M2018 telephones*					
M3000 telephones*					
ACD telephones					
Consoles					
Add-on Modules					
Templates					
Displays					
DS/VMS Access TNs:					
Meridian Mail Ports					
Data Only Ports					
* See "Protected Memory for Terminals: Detail" on page 270 .					

Table 99
PDS calculation worksheet (Part 2 of 5)

Feature	Usage	X	PDS factor*	=	Memory (SL-1 words)**
ISDN BRI:					
MISP cards					
DSLs					
TSPs		X		=	
BRI Line cards		X		=	
Analog trunks		X		=	
Trunk Routes:					
Constant term	1				
Trunk routes					
ISDN PRI/PRI2/ISL:					
D-channels					
PRI Trunks					
ISL 5unks					
ISDN DTI/DTI2/JDMI:					
DTI Loops					
DTI2 Loops					
DISA DN's		X		=	
Network:					
Groups		X		=	
Local Loops		X		=	
Remote loops		X		=	

Table 99
PDS calculation worksheet (Part 3 of 5)

Feature	Usage	X	PDS factor*	=	Memory (SL-1 words)**
ODAS:					
Meridian Mail Ports		X		=	
Data Only Ports		X		=	
Sets (total number)		X		=	
Analog Trunks		X		=	
Customers:					
Constant Term	1	X		=	
Number of Customers		X		=	
Tone and Digit Switch		X		=	
MF Sender		X		=	
Conference Card		X		=	
Digitone Receiver		X		=	
Tone Detector		X		=	
DN Translator:					
DNs		X	5.8	=	
ACD DNs		X	4	=	
ACD Positions		X	2	=	
DISA DNs		X	2	=	
Consoles		X		=	
Dial Intercom Groups		X	1	=	

Table 99
PDS calculation worksheet (Part 4 of 5)

Feature	Usage	X	PDS factor*	=	Memory (SL-1 words)**
DIG translator:					
Maximum number of DIGs		X	1	=	
DIGs		X	2	=	
Number of Sets within DIGs		X	2	=	
Authorization Code:					
Constant Term	1	X		=	
Authorization Codes		X	1.52	=	
History File	1	X		=	
FGD ANI Database:					
Constant Term	1	X		=	
NPA Codes		X		=	
CDP:					
Constant Term	1	X		=	
Steering Codes		X	3	=	
Route lists		X	8	=	
Number of Entries in Route Lists		X	3	=	
CPND:					
Trunk Routes		X	1	=	
Consoles		X	1	=	
ACD DNs		X	1	=	
SL -1 DNs		X	1	=	
Digital Set DNs		X	1	=	
CPND Names		X	20	=	
1 digit DIG Groups		X	11	=	
2 digit DIG Groups		X	101	=	

Table 99
PDS calculation worksheet (Part 5 of 5)

Feature	Usage	X	PDS factor*	=	Memory (SL-1 words)**
ACD/NACD:					
ACD DNs		X		=	
NACD DNs		X		=	
ACD Positions		X		=	
ACD Agents		X	1	=	
Customers		X	11	=	
BARS/NARS:					
Constant term	1	X	5684	=	
NPA Codes		X	31.21	=	
NXX Codes		X	1.06	=	
LOC Codes		X	1.06	=	
SPN Codes		X	1.06	=	
FCAS Tables		X	2	=	
Total PDS Impact (add up the Memory column) _____ SL-1 words					
*From Table 101, "PDS factors by X11 release—units are SL-1 words," on page 258.					
**SL-1 words of data store are 2 bytes in size. One SL-1 word of data occupies an entire SL-1 word of memory, even if the word size for the CPU type is greater than 2 bytes. For example, one 2-byte SL-1 data word uses up one 3-byte word of option 71 memory and one 4-byte word of option 81/61C/51C memory.					

Table 100
UDS calculation worksheet (Part 1 of 6)

Feature	Usage	X	UDS factor **	=	Memory (SL-1 words)**	Reference
Fixed Addr. Globals & OVL data	1	X		=		
500/2500 telephones		X		=		
SL-1 telephones		X		=		
M2006/2008 telephones		X		=		
M2016/2216/2616 telephones		X		=		
M2009 telephones		X		=		
M2112 telephones		X		=		
M2317 telephones		X		=		
M2018 telephones		X		=		
M3000 telephones		X		=		
Consoles		X		=		
Add-on-Modules		X		=		
Displays		X		=		
DS/VMS access TNs						
Meridian Mail Ports		X		=		
Data Only Ports		X		=		
ISDN BRI telephones:						
Constant Term	1					
MISP boards						
DSLs						

Table 100
UDS calculation worksheet (Part 2 of 6)

Feature	Usage	X	UDS factor **	=	Memory (SL-1 words)**	Reference
Analog Trunks:						
RAN Trunks		X		=		
RLA Trunks		X		=		
RLA Trunks		X		=		
AUTOVON Trunks		X		=		
ADM		X		=		
Other Analog trunks		X		=		
Trunks (CDR)		X	9	=		
BRI Trunks		X		=		
Trunk Routes:						
Trunk Routes		X		=		
Trunks (total)		X	0.063	=		
DTI/DTI2/JDMI:						
DTI Loops		X		=		
DTI2 Loops		X		=		

Table 100
UDS calculation worksheet (Part 3 of 6)

Feature	Usage	X	UDS factor **	=	Memory (SL-1 words)**	Reference
PRI/PRI2:						
D-Channels (PRI)		X		=		
D-Channels (PRI2)		X		=		
Output Request Buffers		X	5	=		
PRI Trunks		X	2	=		
ISL Trunks			2	=		
Teletypes:						
Teletypes (total)		X		=		
CDR links		X		=		
HS Links		X		=		
APL Links		X		=		
PMS Links		X		=		
Other Links		X		=		
Local Loops		X		=		
Remote Loops		X		=		
Secondary Tapes		X		=		
Customers		X		=		
Tone and Digit Switch		X		=		
MF Sender		X		=		
Conference Cards		X		=		
Digitone receiver		X				
Tone Detector		X				
Attendants						
Peripheral Signaling cards						
Background Terminals						
MSDL Cards						

Table 100
UDS calculation worksheet (Part 4 of 6)

Feature	Usage	X	UDS factor **	=	Memory (SL-1 words)**	Reference
LPIB		X	4	=		
HPIB (number of Groups)		X	128	=		
PBXOB (number of PS Cards)		X	640	=		
BCSOB (number of PS Cards)		X	640			
AML:						
Constant Term	1	X		=		
AML Links		X				
ACD:						
ACD DN's		X	298	=		
ACD Positions		X	34	=		
ACD-C: (add'l memory)						
ACD-C routes		X	46	=		
ACD-C Positions		X	42	=		
ACD-C DN's		X	80	=		
ACD-C Customers		X	240	=		
ACD-C Trunks		X	1	=		
ACD CRT		X	30	=		
BARS/NARS/CDP:						
Customers		X	216	=		
Route Lists		X	90	=		
Routes with OHQ		X	20	=		
NCOS defined		X	24	=		

Table 100
UDS calculation worksheet (Part 5 of 6)

Feature	Usage	X	UDS factor **	=	Memory (SL-1 words)**	Reference
Call Registers:						
ISDN Fact.		X	1	=		L
Number of Calls Overflowed to all Target ACD DN's (A)		X	2.25	=		A
Number of Calls Overflowed to Local Target DN's (B)		X	-1.8	=		B
Number of expected Calls Overflowed from source (C)		X	0.2	=		C
Snacd+Tnacd (= A + B + C)		X	1	=		D
Number of CR's (Traffic >3000)						
Total voice loop traffic (CCS)		X	0.04	=		E
ACD Inc. Trunks		X	0.18	=		F
Number of CR's (=(D+E+F)*L)		X	1	=		G
Number of CR's (Traffic <=3000)						
System equipped ports		X	0.94	=		I
ACD Inc. Trunks		X	0.06	=		J
ACD Agent Sets		X	-0.94	=		K
Number of CR's (=(D+I+J+ K)*L)						
***Memory for Call Registers		X	1	=		

Table 100
UDS calculation worksheet (Part 6 of 6)

Feature	Usage	X	UDS factor **	=	Memory (SL-1 words)**	Reference
Total PDS Impact (add up the Memory column) _____ SL-1 words						
*From Table 102, “UDS factors by X11 release—units are SL-1 words,” on page 262.						
**SL-1 words of data store are 2 bytes in size. One SL-1 word of data occupies an entire SL-1 word of memory, even if the word size for the CPU type is greater than 2 bytes. For example, one 2-byte SL-1 data word uses up one 3-byte word of option 71 memory and one 4-byte word of option 81/61C/51C memory.						
***Use only the last line from the Call Registers Part. Call register count should still remain below the recommended maximum for the machine type and memory type configured. If more are required then it is time to consider an upgrade to a larger system, or larger memory. For 11C and THOR systems, see “Memory Upgrade Guidelines” on page 95 and the call register recommendations table in that section. For 11E and OMEGA systems, see Table 43, “Typically maximum number of call registers by machine type,” on page 127.						

Table 101
PDS factors by X11 release—units are SL-1 words (Part 1 of 4)

Feature	X11 release						
	15	18	19	20	21	22	23
Fixed Address Globals	5280	5312	6360	9159	9338	10972	9451
Option 21	4831	4863	5822	5822	5822	N/A	N/A
500/2500 telephones*	32.7	32.7	46.4	46.4	49	51	51
CLASS sets	N/A	N/A	N/A	N/A	N/A	N/A	51
SL-1 telephones*	55.5	55.5	63	63	66	79	84
M2006/2008 telephones*	50.5	50.5	68	68	71	85	90
M2009 telephones*	70.5	70.5	68	68	71	85	90
M2016/2216/2616 telephones*	60.5	60.5	78	78	82	95	100
M2112 telephones*	62.5	62.5	70	70	73	86	91
M2317 telephones*	84.5	84.5	92	92	97	111	116

Table 101
PDS factors by X11 release—units are SL-1 words (Part 2 of 4)

Feature	X11 release						
	15	18	19	20	21	22	23
M2018 telephones*	71.5	71.5	89	89	92	106	111
M3000 telephones*	94.5	94.5	102	102	107	121	126
ACD telephones	14	14	14	14	15	16	16
Add-on-Modules	30	30	30	30	31	32	32
Templates	15	15	15	15	15	16	16
Consoles	67	67	126	225	225	233	236
DS/VMS Access TNs	14.5	14.5	14.5	14.5	14.5	14.5	14.5
ISDN BRI:							
MISP cards	N/A	219	477	477	477	508	542
DSLs	N/A	127	129	129	129	133	139
TSPs	N/A	76	76	76	84	132	180
BRI DNs	N/A	8	8	8	27	47	47
Analog Trunks	16.5	16.5	20	20	20	40	51
* See "Protected Memory for Terminals: Detail" on page 270 .							

Table 101
PDS factors by X11 release—units are SL-1 words (Part 3 of 4)

Feature	X11 release						
	15	18	19	20	21	22	23
Trunk Routes:							
Constant term	1024	1024	1024	1024	1024	1024	1024
Trunk Routes	58	67	70	116	116	166	174
ISDN PRI/PRI2/ISL:							
D-Channels	29	56	69	89	89	106	108
ISDN DTI/DTI2/JDMI:							
DTI Loops	70	70	70	70	102	102	102
DTI2 Loops	73	73	113	113	153	153	153
DISA DNs	7	7	7	7	18	18	18
Network:							
Groups	38	40	40	42	45	49	49
Local Loops	70	74	74	78	85	91	91
Remote Loops	73	77	77	81	88	95	95
ODAS	3	3	3	3	3	3	3
Customers:							
Constant Term	1000	1000	1000	1000	1000	1000	1000
Customers	276	276	277	398	398	460	473
Tone and Digit Switch	2	2	2	2	2	2	2
MF Sender	2	2	2	2	2	2	2
Conference Card	2	2	2	2	2	2	2
Digitone Receiver	8	9	9	11	11	11	12
Tone Detector	3	3	3	3	3	3	3

Table 101
PDS factors by X11 release—units are SL-1 words (Part 4 of 4)

Feature	X11 release						
	15	18	19	20	21	22	23
DN Translator (Consoles)	66	66	66	66	66	125	
Author. Code (Custom.)	153	153	153	153	153	199	
FGD ANI Database:							
Constant Term	33	33	33	33	33	33	43
NPA Codes	547	547	547	547	547	547	547
CDP (Constant Term)	434	434	434	434	434	637	637
ACD/NACD:							
ACD DNs	61	61	72	72	72	72	92
NACD DNs	68	68	79	79	79	174 src	174 src
						115 dest	115 dest
ACD Positions	14	14	14	14	14	30	30

Table 102
UDS factors by X11 release—units are SL-1 words (Part 1 of 3)

Feature	X11 release						
	15	18	19	20	21	22	23
Fixed Address Globals	7747	13933	16062	22510	23355	21675	21790
Option 21	6541	8561	8561	9159	9159	N/A	N/A
500/2500 telephones	5.5	5.5	8.5	8.5	17.5	17.5	24.5
SL-1 telephones	16.25	16.25	20.25	20.25	28.25	38.25	39.25
M2006/2008 telephones	13	13	18	18	26	37	38
M2016 telephones	21	21	26	26	34	44	45
M2216/2616 telephones	21	21	26	26	58	68	69
M2009 telephones	19.25	19.25	24.25	24.25	30	40	41
M2112 telephones	21.25	21.25	26.25	26.25	32	42	43
M2317 telephones	36.25	36.25	41.25	41.25	49.25	59.25	60.25
M2018 telephones	30.25	30.25	35.25	35.25	51	61	62
M3000 telephones	46.25	46.25	51.25	51.25	59.25	69.25	70.25
Consoles	107	122	131	131	131	131	133
Add-on-Modules	24	24	24	24	24	24	24
Displays	2	2	2	2	2	2	2
DS/VMS access TNs	16.5	16.5	16.5	16.5	16.5	16.5	16.5
ISDN BRI telephones							
Constant Term	N/A	268	298	298	298	298	298
MISP cards	N/A	1943	2154	2154	2154	2154	2282
DSLs	N/A	175	175	175	175	175	228
BRI line cards	N/A	40	40	40	40	85	85

Table 102
UDS factors by X11 release—units are SL-1 words (Part 2 of 3)

Feature	X11 release						
	15	18	19	20	21	22	23
Analog Trunks:							
RAN trunks	14	14	57	57	57	74	
Broadcast RAN trunks							
RLA Trunks	24	24	35	35	44	45	45
AUTOVON Trunks	17	17	60	70	99	104	115
ADM	24	24	68	72	106	112	123
Other Analog Trunks	19	19	57	76	95	101	112
Trunk Routes	43	98	98	98	107	108	131
BRI trunks	N/A	N/A	69	83	118	124	159
DTI/DTI2/JDMI:							
DTI Loops	72	72	95	95	108	108	108
DTI2 Loops	56	56	73	73	97	97	97
PRI/PRI2:							
D-Channels (PRI)	613	616	724	724	782	785	824
D-Channels (PRI2)	624	624	732	732	796	799	838
Teletypes:							
Teletypes (total)	153	155	2075	3704	3704	3704	3704
CDR links	128	128	128	128	128	128	128
HS links	143	143	143	143	143	143	143
APL links	311	311	311	311	311	311	311
PMS links	22	22	130	130	130	130	130
Other links	8	8	128	128	128	512	512
Local loops	66	66	69	69	69	69	69

Table 102
UDS factors by X11 release—units are SL-1 words (Part 3 of 3)

Feature	X11 release						
	15	18	19	20	21	22	23
Remote loops	83	83	92	92	92	92	93
Secondary Tapes	539	539	539	539	539	539	539
Customers	192	192	229	234	234	237	243
Tone and Digit Switch	59	59	59	59	59	59	59
MF Sender	59	59	59	59	59	59	59
Conference Cards	147	147	150	166	166	183	191
Digitone receiver	10	10	10	12	12	12	12
Tone Detector	11	11	11	11	11	12	12
PS Cards	52	52	52	52	52	59	59
Background terminals	68	68	89	89	89	89	89
MSDL cards			1067	1273	1273	1273	1374
AML (CSL):							
Constant term	31	31	143	143	143	143	143
AML Links	336	469	460	460	460	510	514
Call Registers	75	92	143	163	169	181	197

Default queuing buffer sizes

Use [Table 103](#) as a guide to buffer size.

Table 103

Default buffer sizes for various Meridian 1 options

Option	HPIB	LPIB	500B (PBX)	SL1B (BCS)	CSQI	CSQO
51C/61C/81/81C w/ NT9D66 CP card	950	950	800	255	200	200
51C/61C/81C w/ NT6D19 CP card	1850	1850	800	255	255	255
51C/61C/81C w/ NT5D10 CP card	1850	1850	800	255	255	255
21E/51/61/71	600	600	800	240	120	120
21	150	150	400	160	80	80
11/11E/11C	150	150	N/A	N/A	80	80

Note 1: In a system with MM.AML, ML and CCR, add the number of CSQI and CSQO to the CR requirement obtained from feature impact calculations.

Note 2: The above buffer estimation was based on relatively conservative scenarios which should cover most practical applications in the field. However, since most mathematical models deal with "average traffic", so do the models. When traffic spikes occur, buffer overflow could still happen. In that case, you should raise the buffer size somewhat, depending on the availability of Call Registers (CRs). The maximum number of buffers allowed for CSQI and CSQO is 255 each.

The buffer limit is the maximum number of CRs which can be used for that function out of the total CR pool. If the designated number is larger than needed, and there are still spare CRs, the unused CRs will not be tied up by this specific function. Therefore, there is little penalty of over stating the limit of buffer size (we might run out of CRs, if limits are not properly sets). As long as the system has a relatively large memory (CRs), such as X11 release 18 or later, a more generous allocation of buffers that the number recommended above is not discouraged.

For example, an option 71/81 Call Center with Release 18 or later software (Max 5000 CRs for 71 and 20,000 CRs for 81) and with a lot of applications (Meridian Mail, ML, CCR), it would be a good idea to set its CSQI/CSQO to a higher value, even up to 255.

The above recommendation provides a relative requirement of various buffers. It should be viewed as a minimum buffer size needed to cover most applications under the constraint of a tight memory availability. When increases are to be made, they should be proportional to the above values except CSQI/CSQO which is relatively independent of other buffers and can be increased without affecting others.

Computing memory used

Use the following worksheets to compute memory used:

Table 104

Memory used—ST/NT/XT/option 21/21E/51/61/71

Memory item	x	Factor	Operation	Reference
PDS words	x	pf bytes/word	+	Notes 1 and 2
UDS words	x	pf bytes/word	+	Note 3
PS kB	x	1024 bytes/kB	+	Note 4
Number of overlay cache buffers	x	19kB/cache buffer x 1024 bytes/kB	=	Note 5
		Sum	_____bytes	
	x	1.10		Note 6

Note 1: PDS is protected data store, as computed using [Table 99, "PDS calculation worksheet," on page 248](#).

Note 2: PF is the packing factor from [Table 104](#)—the number of bytes of memory occupied by a single SL-1 data word.

Note 3: UDS is unprotected data store, as computed using [Table 100, "UDS calculation worksheet," on page 253](#).

Note 4: PS is program store, taken from Table 27, "Program store size (kB) for NT, XT, 61, 71 assuming all packages loaded," on page 103, or Table 29, "Patching, Overhead and OS Heap (MB) for option 51C/61C/81/81C w/ NT6D66 CP card," on page 104.

Note 5: Overlay cache buffers are relevant only for release 18 and later. The number of buffers ranges from 2-32, as specified in the configuration data (OV17). A typical configuration uses 5 overlay cache buffers.

Note 6: A 10% margin is included to account for differences between releases and other variations too detailed for the scope of this document.

Table 106

Memory used—option 81/61C/51C w/ NT6D66 and NT9D19 CP cards and Option 11C* (Note 6)

Memory item	x	Factor	Operation	Reference
PDS words	x	pf bytes/word	+	Notes 1 and 2
UDS words	x	pf bytes/word	+	Note 3
Code MB	x	1024 x 1024 bytes/MB	+	Note 4
Patching and OS overhead MB	x	1024 x 1024 bytes/MB	+	Note 4
OS dynamic heap MB	x	1024 x 1024 bytes/MB	+	Note 4
		Sum	_____bytes	
	x	1.10		Note 5

Note 1: PDS is protected data store, as computed using [Table 99, "PDS calculation worksheet," on page 248.](#)

Note 2: PF is the packing factor—the number of bytes of memory occupied by a single SL-1 data word. For option 81/61C/51C, pf = 4.

Note 3: UDS is Unprotected data store, as computed using [Table 100, "UDS calculation worksheet," on page 253.](#)

Note 4: These fields are taken from Table 29, "Patching, Overhead and OS Heap (MB) for option 51C/61C/81/81C w/ NT6D66 CP card," on page 104 and Table 29 "Patching, Overhead and OS Heap (MB) for option 51C/61C/81/81C w/ NT6D66 CP card" on page 104 and Table 30 "Patching, Overhead and OS Heap (MB) for option 11C" on page 104 and Table 29 "Patching, Overhead and OS Heap (MB) for option 51C/61C/81/81C w/ NT6D66 CP card" on page 104.

Note 5: A 10% margin is included to account for differences between releases and other variations too detailed for the scope of this document.

Note 6: For CP2 Processor and Option 11C, compute DRAM used (EPROM is for code and is not affected by user. DRAM is for data.) by performing all the calculations in the table except "Code".

Table 105**Packing factor—ST/NT/XT/option 21/21E/51/61/71**

Machine	Packing Factor (pf)
ST/option 21 (before R18)	2
NT/XT/option 21 (after R18)/option 51, 61, 71	3

Determining whether system memory is adequate

Determine the amount of system memory by using Table 16, “Memory sizes (MB),” on page 90. Convert this quantity to bytes ($\times 1,024 \times 1,024$). In order for the system to have adequate memory for its feature load, Available memory minus Memory used must be greater than zero. For option 11E, the PDS must be less than 256 kB and UDS must be less than 256 kB. If memory is expanded, they must be less than 512 kB.

Protected Memory for Phone Sets: Detail

The protected data blocks for the various set types use varying amounts of memory according to what keys/features are configured on the set. The memory requirements shown in the tables above show only a “typical” (as determined by looking at a sampling of sites) size for the given set type. The tables below can be used to arrive at a precise memory requirement if the details of the feature configurations are known. The maximum size permitted for any set’s protected data block is 356 words.

PBX sets

The size of the protected line block for PBX sets is determined from the following (sizes are in SL-1 words):

Table 107

Size of protected line block for PBX sets—units are SL-1 words

Feature	SL-1 Compool Variable(s)	Size
Basic Line Block	PPBXBLOCK (=512 total)	18
Template Area	PBX_TEMPL_AREA (words 19-511 of PPBXBLOCK)	0-494
Card Block Component	1/4 PCARDBLOCK (=9/4)	2.25

The key layout portion of the template requires

$$(4 + nf)/rs \text{ words}$$

where “nf” is the number of features defined for the set, and “rs” is the number of sets sharing the same template.

In addition to the basic line block, each feature requires extra data space as follows (sizes are in SL-1 words):

Table 108

Data space requirements for PBX set features—units are SL-1 words (Part 1 of 2)

Feature	SL-1 Compool Variable(s) and/or comment	Size
ACD	P_ACD_KEY_DATA	16
Associate Set (AST)		2
Authcode	.AUTH_TEMPL_SIZE = .NAUT_MAX(6) * (((.AUTH_LEN_MAX(14) - 1)>>2)+1)	6-24
Automatic Wakeup	HM_STRUCT	5
Call Forward Number	CFW_STRUC (4-24 digits/4)	1-8
Call Park	CALL_PARK_STRUC	2
Call Party Name Display	PBX_NAME_ENTRY	1
CFCT		2
CFNA/Hunting Number	CFNA_ENTRY	4
Dial Intercom Group	PBX_DIG_STRUC	2
DN	PBX_DN_STRUC	3
EFD DN	EFD_STRUC	4
EHT DN	EHT_STRUC	4
Enhanced Hot Line DN	((# digits in DN) / 4) + 1 : 4 - 36 digits	2-10
FAXS	FAXS_BLK	17
FFC SCP PASS	FFC_SCPW_STRUC	2
Hot Line DN	((# digits in DN) / 4) + 1 : 4 - 36 digits	2-10
HUNT	HUNT_STRUC	4
Internal Call Forward		19
Last Number Redial	# digits in LNR DN / 4 : (4 - .MAX_LNR_SIZE=32) / 4	1-8

Table 108**Data space requirements for PBX set features—units are SL-1 words (Part 2 of 2)**

Feature	SL-1 Compool Variable(s) and/or comment	Size
Manual Line		2
Message Center DN		2
Message Registration	MR_SET_METER	1
Offhook Interdigit Index	OHAS_INDEXES	1
Pretranslation Enhancement	1/2 word (for 255 calling groups)	1/2
SCI/CCOS/RMS		2
Speed Call Controller	SPEED_CALL_STRUC	1
Speed Call User	SPEED_CALL_STRUC	1
Stored Number Redial	# digits in SNR DN / 4 : (4 - .MAX_SNR_DIGITS=32) / 4	1-8
System Speed Call User	SPEED_CALL_STRUC	1
Tenant Number	TENANT_NUMBER	1

Digital sets

The size of the protected line block for SL-1 sets is determined from the following (size in SL-1 words):

Table 109**Size of protected line block for SL-1 sets—units are SL-1 words**

Feature	SL-1 Compool Variable(s)	Size
Basic Line Block	PBCSBLOCK (=512 total)	31
Template Area	BCS_DATA (words 31-511 of PBCSBLOCK)	0-481
Card Block Component	1/4 PCARDBLOCK (9/4)	2.25

The key layout portion of the template for the SL-1 basic set requires $(4 + \text{the number of key lamp strips} \times 10)/rs$ words where rs = the number of sets sharing the same template. For digital sets, the requirement is as follows:

M2006 $10 + (\text{\#of non-key features})/rs$

M2008 $10 + (\text{\#of non-key features})/rs$

M2016 $20 + (\text{\#of non-key features})/rs$

M2216 $20 + 30 \times (\text{\#AOM}) + (\text{\#of non-key features})/rs$

M2616 $20 + 30 \times (\text{\#AOM}) + (\text{\#of non-key features})/rs$

M2009 $10 + (\text{\#of non-key features})/rs$

M2112 $12 + (\text{\#of non-key features})/rs$

M2018 $21 + (\text{\#of non-key features})/rs$

M3000 $44 + (\text{\#of non-key features})/rs$

M2317 $34 + (\text{\#of non-key features})/rs$

where rs = the number of sets sharing the same template, and $\text{\#AOM}$ = the number of add-on modules.

In addition to the basic line block requirement, each feature requires extra data space as follows (sizes are in SL-1 words):

Table 110
Data space requirements for SL-1 set features—units are SL-1 words (Part 1 of 5)

Feature	SL-1 Compool Variable(s), service change format, and/or comment	Size
ACD Agent and ID Key	.acd_agent p_acd_key_data KEY xx ACD xxxx(xxx)* yyyy(yyy) *(xxx) - up to 7 digs w/DNXP pkg	16
ACD Display Calls Waiting Key	acd_dwc_ext KEY xx DWC yyyy(yyy)	2
ACD Agent Key (for supervisor)	acd_agt_ext KEY xx AGT yyyy(yyy)	2
ACD Enable Interflow Key	acd_eni_ext KEY xx ENI yyyy(yyy)	2
ACD Night Service DN	acd_nsvc_struct KEY xx NSVC yyyy(yyy)	2
Associate Set (AST)	bcs_ast_struct AST xx yy	3
Authcode (non-key)	.auth_tmpl_size (6) * (((.AUTH_LEN_MAX (14) - 1)>>2)+1) AUTH n xxxx	6-24
Autodial Key	(4-32 digits/4) .max_adl_size=31 KEY xx ADL yy (zzzz)	1-8
Busy/Forward Status Key	bfs_struct KEY xx BFS tn	1
Call Forward Key	cfw_struct : (.cfw_default (4) or (.MAX_CFW_SIZE=31 + 1)digits/4)	1-8
No Hold Conference and Autodial	(same as autodial) KEY xx CA yy zzzz	1-8

Table 110**Data space requirements for SL-1 set features—units are SL-1 words (Part 2 of 5)**

Feature	SL-1 Compool Variable(s), service change format, and/or comment	Size
No Hold Conference and Direct Hotline	(htl_dn_size + 3 >> 2) + wordoffset(bcs_hot_ter_dn) = (3:34)>>2 + 4 = 4-12 KEY xx CH D yy xxxx	4-12
No Hold Conference and Hotline List	wordoffset(bcs_hot_ter_dn) = 4 KEY xx CH L yyyy	4
No Hold Conference and Speed Call	speed_call_struc KEY xx CS yyyy	1
Dial Intercom Group Key	bcs_dig_struc KEY xx DIG xxxx yy R/V	2
DID Route Control	BCS_DRC_STRUC KEY xx DRC yyy	1
Group Call Key	bcs_grcal_entry KEY xx GRC yy	1
Hotline - One Way, Two Way or Intercom	(htl_dn_size + 3 >> 2) + wordoffset(bcs_hot_ter_dn) = 3:34>>2 + 4 = 4-12 KEY xx HOT D dd yyyy(yyy) KEY xx HOT D dd num DN m KEY xx HOT D nn x...x yyyy(yyy) KEY xx HOT I dd num m	4-12
Hotline - One Way or Two Way List	wordoffset(bcs_hot_ter_dn) KEY xx HOT L bbb KEY xx HOT L bbb yyyy(yyy)	4
Internal Call Forward Key	.cfw_default (1) or ((#digs(31) - 1)/4 + 1) : max 8 .max_cfw_size=31 KEY xx ICF 4-(16)-31 xxxx	1-8
Loudspeaker	bcs_dn_struc KEY xx LSPK yyyy	3

Table 110**Data space requirements for SL-1 set features—units are SL-1 words (Part 3 of 5)**

Feature	SL-1 Compool Variable(s), service change format, and/or comment	Size
Multiple Call Non-ringing DN Key	bcs_dn_entry KEY xx MCN yyyy(yyy)	3
Multiple Call Ringing DN Key	bcs_dn_entry KEY xx MCR yyyy(yyy)	3
Message Registration Key	mr_set_meter KEY xx MRK	1
Message Waiting Key	mwc_entry KEY xx MWK yyyy(yyy)	4
Call Park Key	call_park_struc KEY xx PRK	2
Private Line Non-ringing Key	bcs_dn_entry KEY xx PVN yyyy	3
Private Line Ringing Key	bcs_dn_entry KEY xx PVR yyyy	3
Stored Number Redial Key	.max_rdl_size (31): (1+#saved dn digs(3-31))/4 + 1 KEY xx RDL (yy)	2-8
Ringing Number Pickup Key	bcs_rnpg_entry KEY xx RNP	1
Radio Paging	bcs_dn_entry KEY xx RPAG	3
Speed Call Controller Key	speed_call_struc KEY xx SCC yyyy	1
Single Call Non-ringing DN	bcs_dn_entry KEY xx SCN yyyy	3
Single Call Ringing DN	bcs_dn_entry KEY xx SCR yyyy	3

Table 110**Data space requirements for SL-1 set features—units are SL-1 words (Part 4 of 5)**

Feature	SL-1 Compool Variable(s), service change format, and/or comment	Size
Speed Call User Key	speed_call_struct KEY xx SCU yyyy	1
Signalling Key	bcs_dn_entry KEY xx SIG yyyy(yyy)	3
System Speed Call Controller Key	speed_call_struct KEY xx SSC yyyy	1
System Speed Call User Key	speed_call_struct KEY xx SSU uu	1
Voice Call Key	bcs_dn_entry KEY xx VCC yyyy	3
Non-key Features		
Data Equipment Mode (flex voice/data tn)	dtm_struct DEM DTE (DCE)	1
Flexible CFNA DN for External Calls	efd_struct EFD xxxx	4
Hunt DN for External Calls	eht_struct EHT xxxx	4
Flexible Call Forward No Answer	afdn_struct FDN xxxx	4
Offhook Alarm Security DN Index for Forced Out of Service	ohas_indexes FSVC (0) - 9	1
Hunt DN (chain) for Internal Calls	hunt_struct HUNT xxxx	2
Alternate Hunt DN (chain) for Internal Calls	ahnt_struct AHNT xxxx	4

Table 110**Data space requirements for SL-1 set features—units are SL-1 words (Part 5 of 5)**

Feature	SL-1 Compool Variable(s), service change format, and/or comment	Size
Alternate Hunt DN for External Calls	aeht_struct AEHT xxxx	4
Alternate Flexible CFNA DN for External Calls	aefd_struct AEFD xxxx	4
Number of Key Lamp Strips	1 word per KLS in range KLS 1-7	1-7
Last Number Redial Size	.lnr_default(4) or ((xx+1)/4) LNRS xx (4-(16)-32)	1-8
Second DN Sharing Voice Mailbox	bcs_dn_struct SECOND_DN xxxx(xxx)	3
Station Control Password	ffc_scpw_struct SCPW xxxxx	2
Tenant	tenant_number TEN 1-511	1
template area users for which commands are implicit or entered outside of LD 11		
Ringing Change Key	supp_features	5
Notification Key Lamp	nkl_data	1
Hospitality Data	hsp_set_data	2
Hotel/Motel Info	hm_struct	5
Campon Priorities	povr_struct	1
Sar Group	save_bcs_sgrp	1

Mass Storage size worksheet

SL-1 Processors

Floppy disk count on Omega systems

As of Release 20, all systems are equipped with hard disk drives. From these drives it is possible to perform an unattended sysload, even if the number of floppy disks used to load the software initially was greater than the number of available disk drives (i.e. greater than two). In Release 20 and 21, as many as four floppy disks are being used to distribute the software. Prior to Release 20, if the system was of a type which didn't have a hard drive (i.e. option 21E), code compression was used to keep the floppy disk count to a maximum of two so that unattended sysload from the floppy disks would be possible.

Table 111
ST/Option 21 disk space in 1kB records (2 disks)

X11 release	Machine Type(s)	2 5.25" disks (2280 records)	2 3.5" disks (2850 records) "2M"	2 3.5" disks (5700 records) "4M"
14	ST	500	1070	3920
17	ST (EPE)		230	3080
17	Option 21 (IPE)		80	2930

Table 112
NT/XT/Options 51/61/71 disk space in 1kB records (2 disks)

X11 release	Machine Type(s)	2 5.25" disks (1140 records)	2 3.5" disks (1425 records) "2M"	2 3.5" disks (2850 records) "4M"
14	NT/XT	375	955	3805
17	NT/XT (EPE)		225*	3075
17	51/61/71 (IPE)		75*	2925
18	XT/61/71/21E (EPE/IPE)			1910
18	XT/61/71/21E (EPE/IPE)			760
*On X11 release 17, the 2M disks were not quite big enough to hold the typical large database of 500 words. The problem was solved by using 3 disks and/or selective packaging.				

In [Table 114](#), floppy disks are 3.5", "4M" disks which hold 2850 records each.

Table 113
Options 51/61/71/21E disk space in 1Kb records (2 or more disks)

Machine Type		X11 release		
		19	20	21
Option 71	disk records used	6274	8936	9722
	number of disks required	3	4	4
Option 51/61	disk records used	5417	7991	8612
	number of disks required	3	3	4
Option 21E	disk records used	5227	7781	8365
	number of disks required	2	3	4

Table 114
Floppy disk count on Thor systems (Options 51C/61C/81/81C)

X11 release	Number of 3.5" (2850 record) floppy disks required			
	for program	for SL-1 data	for SL-1 data back-up	total
19	7	1	1	9
20	8	1	1	10
21	9	1	1	11
22	12	1	1	14
23*	16	1	1	18

Note that on Omega and Thor systems the user database must fit on one, 2850 record, floppy disk. Thus, the database can not exceed 2840 records (assuming 10 Kb for "overhead"). Presently, the largest existing databases are estimated to be approximately 1900 records for an option 81 with an NT6D66 CP card and 2800 records for an option 81 system with an NT9D19 CP card.

*New Release 23 systems will be shipped with the IODU/C which delivers software on a CD-ROM and data on 2MB floppy disks. (There will be sites that require more than one 2MB floppy for all the customer data.) Release 23 software only upgrades to existing systems can still have the software shipped on the set of 16 4MB floppies. (See also "Mass Store on option 51C/61C/81/81C systems (NT6D66, NT9D19, and NT5D10 CP cards)" on page 128).

Auxiliary processors

[Table 115](#) shows available space on auxiliary processor storage media.

Table 115
Mass storage space available on auxiliary processors

Product name	System tape 155 MB		Applications tape 155 MB		Hard disk		
	MB Used	MB Avail.	MB Used	MB Avail	MB Used	MB Avail	Disk Size
Meridian Link Module	38	117	6.5	148.5	44.5	127.5	172
Customer Controlled Routing	38	117	10.5	144.5	48.5	123.5	172
911 services	38	117					
Meridian MAX4 MiniMAX	25	130	28	127	82	90	172
Meridian MAX5	45	110	25	130	123	397	520
Interactive Voice Response	45	110	75	80	155	85	240